Springwater Corridor Wetlands
Section 206 Aquatic Ecosystem Restoration
Portland, Oregon

DRAFT
ENVIRONMENTAL ASSESSMENT

February 2007

U.S. Army Corps of Engineers, Portland District
and
City of Portland

Prepared by:
Tetra Tech, Inc.
Portland, OR

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SECTION 1. BACKGROUND

1.1 Study Location

The proposed Springwater Corridor Wetlands Section 206 Restoration project is located in southeast Portland, Oregon, in the Johnson Creek watershed (Figure 1). Specifically, the area of interest is generally located north of SE Foster Road and between SE Harold Street, SE 111th Avenue, and SE 122nd Avenue (Figure 1). The project area includes four contiguous parcels within the Johnson Creek 100-year floodplain, identified from upstream to downstream as the Zenger Wetland, Central Wetland, North Parcel and Beggar's Tick Marsh Wildlife Refuge (west of SE 111th Avenue) (see Figure 2). The four parcels comprise approximately 50 acres.

The project parcels are not directly connected to Johnson Creek except during extreme flood events when localized stormwater runoff and backwater from Johnson Creek do enter the sites. The Zenger wetland has a continuous spring discharge creating surface flow that travels through the parcels in a generally northwesterly direction, and connects with Beggars Tick Marsh to the west. Surface water from Beggars Tick Marsh occasionally flows into Johnson Creek via a drainage ditch along the Springwater Trail and culvert under SE Foster Road. The project parcels also receive stormwater runoff from adjacent areas, and the poorly drained soils cause seasonal ponding of water and have resulted in a total of about 35 acres of wetlands that currently exist on the sites. The Springwater Trail, the former right-of-way of an abandoned electric trolley line, traverses through the project area in a southwest-northeast direction.

1.2 Purpose and Need

The purpose of the proposed action is to improve habitat for a wide variety of wildlife species, including Neotropical migratory birds, waterfowl, shorebirds, amphibians, reptiles, and mammals. The scope of this ecosystem restoration project would consist of up to 40 acres of wetland and riparian restoration.

The project is needed because the floodplain of Johnson Creek has been highly modified for urban development over the past 150 years. There are only a few remnant wetland areas remaining and the restoration of this habitat would dramatically improve conditions for a variety of wildlife species in the watershed, including sensitive species.

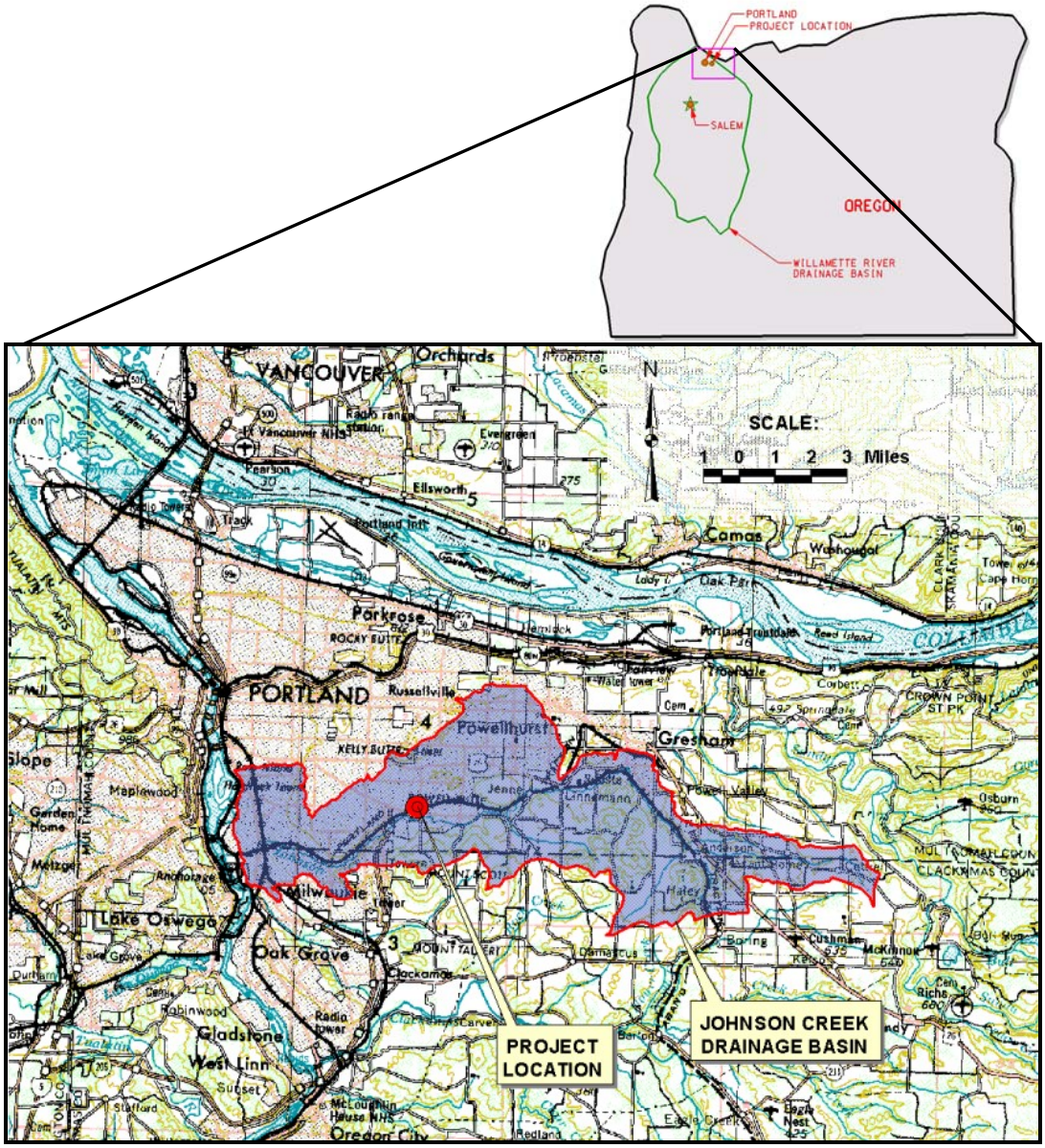

Figure 1. Project Vicinity Map

Figure 2. Project Parcels Shown on 2002 Aerial Photo (City of Portland).

1.3 Project Site Background

The project area has been modified significantly from its historic condition. Historic mapping and notes from the General Land Office surveys in 1851 indicate that the Johnson Creek basin, including the project area, was predominantly upland closed forest, with dominant tree species such as Douglas fir (Rhodes 1991; http://oregonstate.edu/dept/pnw-erc/database/physio.htm). Because the project area is within the floodplain of Johnson Creek there were likely wetland and oxbow areas in the vicinity. The soils mapped for the project area (SCS 1983) are predominantly poorly drained silt loams that are formed from recent alluvium and occur on floodplains. The permeability is slow, the seasonal water table is high and periodic inundation can occur.

Much of the surrounding floodplain has been filled. The project parcels are some of the only remaining natural floodplain/wetland areas remaining north of SE Foster Road. Present land uses adjacent to the project site are generally residential and commercial/industrial. These adjacent land uses include established residential development to the north and northwest; a mix of

established residential and commercial enterprises to the west; an automobile wrecking yard and various small manufacturing, fabrication, and industrial/commercial service businesses to the southwest; a warehouse/office park, some cultivated agricultural land associated with Zenger Farms, established residential development, and Foster Road and Johnson Creek to the south; and a mix of established residential and commercial uses and SE 122nd Avenue to the east.

The project area is highly degraded due to non-native invasive species, filling, and the lack of buffers from surrounding land uses. The area is dominated by non-native plant species such as reed canary grass (*Phalaris arundinaceae*), Himalayan blackberry (*Rubus procerus*), and English hawthorn (*Crataegus monogyna*). Approximately 2/3 of the north parcel has been filled with 3 to 5 feet of material, significantly reducing the presence of wetlands in the area. In spite of these problems, the project area is home to a variety of wildlife species including small mammals, waterfowl, raptors, songbirds, and native amphibians. With proper restoration measures, the project area could provide a much needed wetland refuge for rare and sensitive wildlife within the City of Portland.

These sites represent a significant opportunity to restore a diverse native wetland ecosystem within the City of Portland city limits. Incidental benefits may accrue from the removal of fill from the floodplain and provide minor additional stormwater storage.

SECTION 2. AFFECTED ENVIRONMENT

2.1 Geology/Soils/Sediments

The project area is located in the northern end of the Willamette Valley physiographic province. This portion of the valley and low hillslopes is blanketed by thick, non-marine sedimentary deposits of the Pleistocene age, including Missoula flood deposits up to 120 meters thick. More recent alluvial deposits occur along rivers/streams and their floodplains. The slopes to the east of the valley are the foothills of the Western Cascades province and are primarily volcanic in origin, including volcanic craters/cones in the City of Portland such as Mt. Tabor and Mt. Sylvania. (Franklin & Dyrness 1988 and SCS 1983)

The publication *A Description of Aquifer Units in Western Oregon* shows the region underlain by tertiary-quaternary sedimentary deposits (USGS, 1983). The USGS published a description of the Portland Basin's regional hydrogeology in 1993. The 1993 report describes the area underlying the project area as unconsolidated deposits. The results are based on driller's reports from 15,000 wells bored from 1955 to 1971.

According to soil mapping from the Natural Resources Conservation Service (NRCS; formerly Soil Conservation Service), the soils on the site are primarily Wapato silt loam, with the upland slope of Zenger farm comprised of Multnomah-Urban land complex (SCS 1983). Wapato silt loam is a poorly drained soil formed from old alluvium. The water table typically ranges from about 1 foot above the surface to 1 foot below the surface during the winter and spring months. The soil typically needs to be drained to be suitable for farming and is susceptible to tillage pans. The natural vegetation prior to disturbance is western red cedar, Oregon ash, willow, roses, sedges, grasses, and forbs. (SCS 1983)

Multnomah soils are well drained silt loams typically on higher terraces formed in gravelly and cobbley alluvium. Permeability is moderate, runoff is medium and the hazard of erosion is moderate. This soil is well suited to farming. A significant amount of urbanization has occurred on these soils in the City of Portland. A significant problem has been groundwater contamination from septic systems due to the rapid permeability in gravel zones. The natural vegetation is Douglas fir, Oregon white oak, big-leaf maple, vine maple, western hazel, oceanspray, roses, grasses, and forbs. (SCS 1983)

2.2 Water/Water Quality

Johnson Creek drains approximately 53 square miles at the Willamette River confluence, including approximately 40 square miles upstream of the project site. Figure 3 shows the watershed drainage area and floodplain relative to the project location. Johnson Creek is approximately 25 miles long, and the project site is located approximately eight miles upstream of the mouth. Bordering watersheds are the Clackamas River to the south, Sandy River to the east, and Columbia Slough to the north.

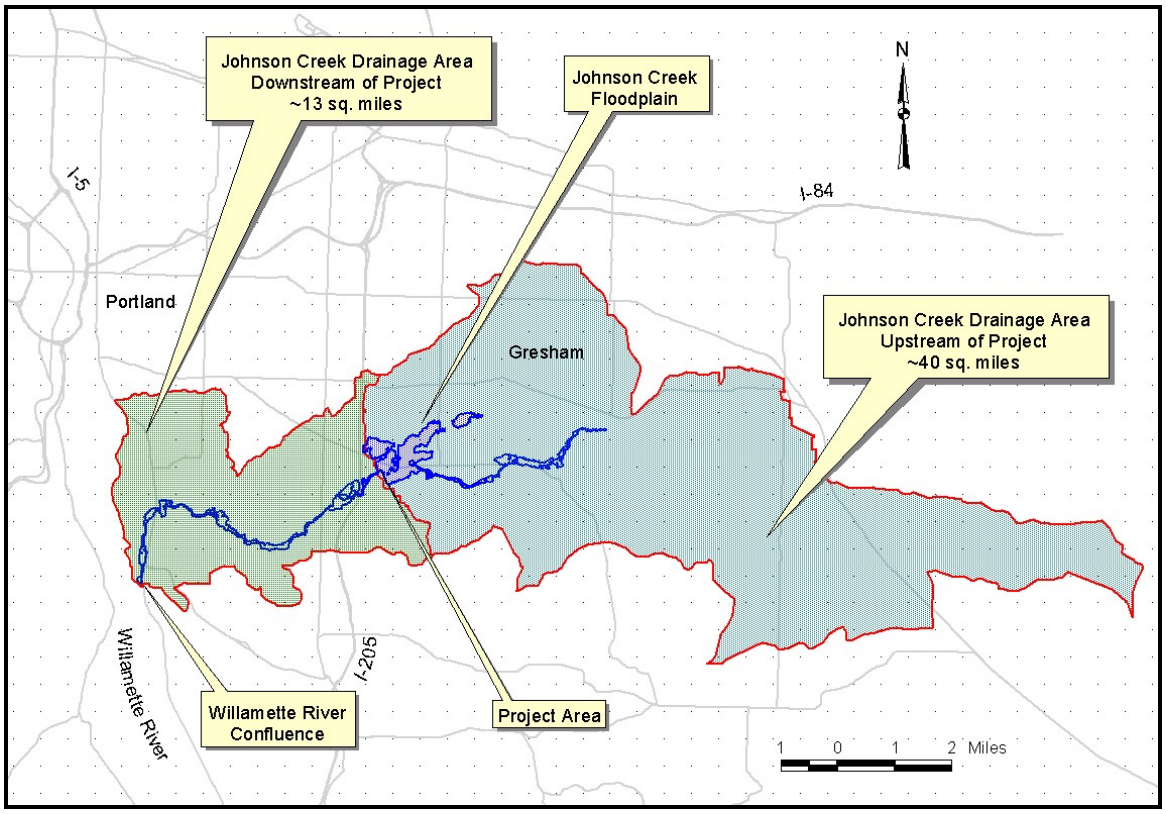

Figure 3. Johnson Creek Watershed

Peak flows in Johnson Creek typically occur from November through March and are primarily driven by high rainfall in the watershed. Low flows occur in July, August, and September. Summer flows at times drop below 1 cfs, with a median summer flow of approximately 5 cfs. The median winter flow is approximately 65 cfs. The annual median flow (50% exceedance) is approximately 24 cfs, and the average flow is approximately 80 cfs. Flood flows have been estimated near the project site and range from a 2-year event of approximately 1,230 cfs to a 100-year event of approximately 3,180 cfs.

The project site is within the 100-year floodplain of Johnson Creek. Figure 4 shows the 100-year floodplain of Johnson Creek derived from the model in relation to the project location. The figure shows that essentially the entire project area lies within the 100-year floodplain.

The primary sources of hydrology to the site, however, are not from Johnson Creek flows, but rather from springwater flow, direct precipitation and localized stormwater runoff. The project site drains a small local watershed during localized rainfall events, with flows generally from east to west. Surface water flows are generally carried away from the project site by the storm drain network along the streets that terminate along the edge of the project site. The primary storm drain transmission pipes are generally 15 – 20 feet below the ground surface in the project area. Several storm drains discharge directly into Beggars Tick Marsh, which is hydrologically connected to all of the project site features; although flow rates between the north and central parcels are limited by the dense vegetation and narrow connection. The flow path across the project site is generally flat, and flow directions can reverse, depending on the hydrologic conditions.

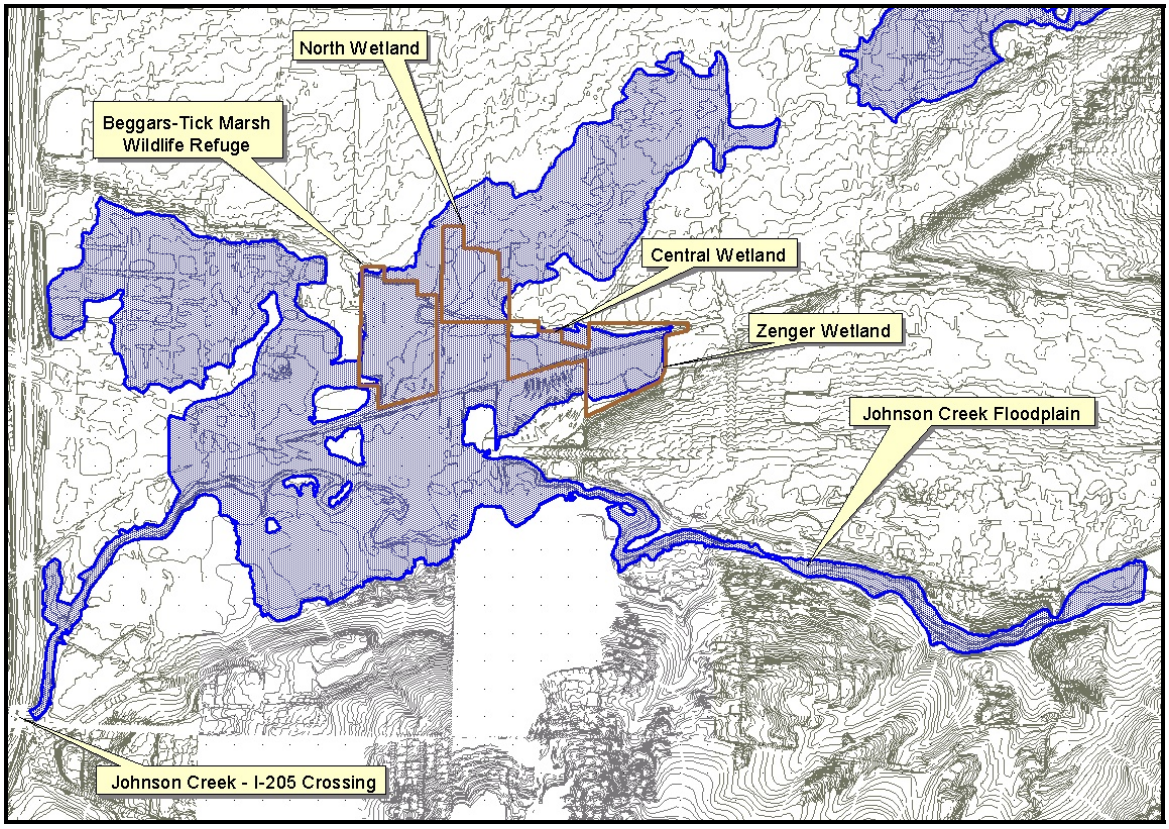

Figure 4. Johnson Creek 100-year Floodplain in the Lents Area

Johnson Creek is listed on the State of Oregon's 303(d) list (2004/2006 database) for multiple contaminants, including DDT, dieldrin, E. coli, fecal coliform, PCBs, PAHs, and temperature. In September 2006 the U.S. EPA approved TMDLs in Johnson Creek for temperature, bacteria (E. coli and fecal coliform), and pesticides (DDT and dieldrin) (ODEQ 2006).It is possible that some of these contaminants are present on the project site, although the site is generally not connected to Johnson Creek except during extreme floods.

Water and sediment quality sampling is currently being conducted on the project site. There is the potential for stormwater runoff of contaminants from adjacent roadways and commercial/industrial businesses, such as metals and oils and greases. Also, because the project area has wetlands on the site, it is likely that DDT and its breakdown products will be present from historic spraying of the area as well as atmospheric deposition.

2.3 Vegetation and Wetlands

Zenger Wetland

The Zenger Wetland site covers approximately 14 acres and is located at the base of the Zenger Farm hillslope and an area across the Springwater Trail to the north (see Figure 2). The majority of the flat area at the base of the slope is wetland. The portion of the site to the north of the trail is partially wetland and partially upland with Douglas' spirea (*Spirea douglasii*), reed canary

grass, and Himalayan blackberry dominant in various portions of the site. The majority of the south site is an emergent wetland dominated by reed canary grass, with smaller pockets dominated by soft rush (*Juncus effusus*) and small-fruited bulrush (*Scirpus microcarpus*). A small stand of willow is also present. The wetland receives water from a large spring within the wetland, as well as rainfall runoff. The spring provides the majority of water and is located adjacent to a large Western red cedar (*Thuja plicata*) tree at the south end of the wetland. Standing water is present on much of the southern portion of the site year-round. Compared to the conditions observed during 2000 (Adolfson 2000), the site has significantly more standing water and is almost completely dominated by reed canary grass. Historic photos show the site as previously farm or pasture with much less water. The current situation may be a result of the blockage of culverts under the Springwater Trail, or from increased runoff to the site from surrounding land uses.

Central Wetland

The Central Wetlands parcel is approximately 12 acres total with approximately 5.0 acres of wetlands. The remainder of the site is uplands primarily dominated by English hawthorn and Himalayan blackberry. There are two distinct wetland areas, on the western half and the eastern half. The western portion of the wetland is primarily an emergent marsh area with pockets of perennial standing water. The eastern portion of the wetland is primarily a willow/hawthorn thicket with a seasonally inundated ditch adjacent to the Springwater Trail. The emergent wetland is dominated by cattails (*Typha angustifolia*), reed canary grass, soft rush, small-fruited bulrush, and creeping buttercup (*Ranunculus repens*). The willow/hawthorn thicket is dominated by Pacific willow (*Salix lasiandra*), Sitka willow (*S. sitchensis*), and both the native and English hawthornes (*C. douglasii* and *C. monogyna*). Small stands of willow and hawthorne are present in the emergent wetland. The southwest corner of the site is not wetland and is dominated by non-native grass species such as tall fescue (*Festuca arundinacea*), velvet grass (*Holcus lanatus*), and bluegrass (*Poa* sp.). There are currently no native trees on the site, but several ornamental willow trees, such as weeping willow and curly willow.

North Parcel

The North Parcel is approximately 12 acres in size and is located east of SE 111th Avenue and south of SE Harold Street. The site has approximately 3.6 acres of wetlands and the remainder of the site is comprised of 3-4 feet of gravel, rock and concrete fill uplands with sparse non-native grass cover and extensive areas of Himalayan blackberry (*Rubus discolor*) and Scotch broom (*Cytisus scoparius*). The wetland area has four distinct plant communities, including willow shrubland (*Salix lasiandra* and *S. sitchensis*), a Douglas spirea thicket (*Spirea douglasii*), a reed canary grass wetland, and a black cottonwood/hawthorn forest (*Populus balsamifera, Crataegus douglasii* and *C. monogyna*). A small stand of big leaf maple (*Acer macrophyllum*) is present on the southeast corner of the site. Standing water is present seasonally along the southern border of the site in a vegetated swale and throughout the willow and spirea shrublands. It appears that the soils are quite compacted in the cottonwood/hawthorn forested area and water seasonally ponds from precipitation in this area. The cottonwood/hawthorn and big leaf maple forested areas are approximately 2 feet higher in elevation than the other plant communities. Extensive hummocks are present throughout the site from downed wood. As the cottonwoods reach about 8-12 inches

in diameter they easily fall, likely due to the highly compacted soils and inability to grow an extensive root system. Non-native species are present throughout the site and include Himalayan blackberry, Scotch broom, English hawthorn, reed canary grass, and hybrid poplars (possible cross between P. *balsamifera* and P. *alba*). Most of the trees on the site are fairly young, approximately less than 30 years old, and large woody debris is limited in abundance and diversity in the parcel.

Beggar's Tick Wildlife Refuge

The Beggar's Tick Marsh Wildlife Refuge, owned by Metro, is approximately 22 acres in size and is located west of SE 111th Avenue and north of the Springwater Trail. Approximately 19 acres of the site is wetland and the remainder of the site is comprised of filled areas, including a short loop trail in the SE corner. Three plant communities are present in the wetland area, including an emergent marsh dominated by beggar's ticks (*Bidens cernua, B. frondosa,* and *B. tripartita*) and smartweed (*Polygonum* sp.), a willow scrub/shrub wetland dominated by a variety of willows (*S. geyeriana, S. lasiandra, S. hookeriana*), and Douglas spirea (*Spirea douglasii*), and an ash/cottonwood seasonal wetland in the southern portion of the site. The uplands are dominated variously by black cottonwood, black locust (*Robinia pseudo-acacia*), and Himalayan blackberry. Some Douglas firs (*Pseudotsuga menziesii*) are also present.

2.4 Fish and Wildlife

Fish are not typically present on the site because it is disconnected from Johnson Creek. During major floods, it may be possible for fish to enter the site, but this would be a very rare situation. Fish in Johnson Creek include coho and chinook salmon, steelhead and cutthroat trout, Pacific lamprey, redside shiners, reticulate sculpin, large scale suckers, and speckled dace (Portland BES 2005).

Wildlife observed or likely to be present in the project area include red-winged blackbird, scrub jay, red-tailed hawk, northern harrier, American kestrel, yellow warbler, brown-headed cowbird, fox sparrow, spotted towhee, mourning dove, green-winged teal, cinnamon teal, mallard, as well as Canada goose, green heron, Virginia rail, killdeer, Northern flicker, ring-necked pheasant, American crow, common yellowthroat, barn swallow song sparrow, house sparrow, western bluebird, violet-green swallow, marsh wren, American robin, Wilson's warbler, white-crowned sparrow, bullfrog, both common and northwestern garter snakes, striped skunk and Townsend's mole. Several native amphibians were observed by Adolfson (2000) including northwestern and long-toed salamander, and red legged frog. Coyote are frequently observed on the site as well, and nutria is likely to be present, as they are widespread throughout the City of Portland.

An amphibian habitat survey was conducted in the fall of 2006 and Pacific tree frog and long-toed salamander were observed. In 2000, Northwestern salamander, long-toed salamander, Pacific tree frog, red-legged frog, bullfrog, common garter snake, and Northwestern garter snakes were observed in the project area (Adolfson 2000).

2.5 Threatened and Endangered Species

A species list was received from the U.S. Fish and Wildlife Service (USFWS) on May 1, 2006. A total of 66 species have been recorded to occur in Multnomah County, Oregon that have been designated as threatened, endangered, proposed, or candidate species, or species of concern.

Table 1. Listed, Proposed, Candidate, and Species of Concern in Multnomah County.

Common Name	**Scientific Name**	**Status**
Columbian white-tailed deer	*Odocoileus virginianus leucurus*	E
Willamette daisy	*Erigeron decumbens var. decumbens*	E
Bradshaw's lomatium	*Lomotium bradshawii*	E
Bald eagle	*Haliaeetus leucocephalus*	T
Northern spotted owl	*Strix occidentalis caurina*	T
Chum salmon (Columbia River)	*Oncorhynchus keta*	T
Coho salmon (Lower Columbia River)	*Oncorhynchus kisutch*	T
Steelhead (Lower Columbia River)	*Oncorhynchus mykiss ssp.*	T
Sockeye salmon (Snake River)	*Oncorhynchus nerka*	E
Chinook salmon (Lower Columbia River)	*Oncorhynchus tshawytscha*	T
Bull trout (Columbia River Basin)	*Salvelinus confluentus*	T
Golden Indian paintbrush	*Castilleja levisecta*	T
Howellia	*Howellia aquatilis*	T
Kincaid's lupine	*Lupinus sulphureus var. kincaidii*	T
Nelson's checker-mallow	*Sidalcea nelsoniana*	T
Yellow-billed cuckoo	*Coccyaus americanus*	C
Streaked horned lark	*Eremophila alpestris strigata*	C
Oregon spotted frog	*Rana prestiosa*	C
Red tree vole	*Arborimus longicaudus*	SOC
Pacific western big-eared bat	*Corynorhinus townsendii townsendii*	SOC
California wolverine	*Gulo gulo luteus*	SOC
Silver-haired bat	*Lasionycteris noctivagans*	SOC
Long-eared myotis	*Myotis evotis*	SOC
Fringed myotis	*Myotis thysanodes*	SOC
Long-legged myotis	*Myotis volans*	SOC
Yuma myotis	*Myotis yumanensis*	SOC
Camas pocket gopher	*Thomomys bulbivorus*	SOC
Northern goshawk	*Accipiter gentilis*	SOC
Tricolored blackbird	*Agelaius tricolor*	SOC
Band-tailed pigeon	*Columba fasciata*	SOC
Olive-sided flycatcher	*Contopus coperi*	SOC
Harlequin duck	*Histrionicus histrionicus*	SOC
Yellow-breasted chat	*Icteria virens*	SOC
Lewis' woodpecker	*Melanerpes lewis*	SOC
Mountain quail	*Oreortyx pictus*	SOC
Oregon vesper sparrow	*Pooecetes gramineus affinis*	SOC
Purple martin	*Progne subis*	SOC
Tailed frog	*Ascaphus truei*	SOC
Oregon slender salamander	*Batrachoseps wrighti*	SOC
Northwestern pond turtle	*Emys marmorata marmorata*	SOC
Larch Mountain salamander	*Plethodon larselli*	SOC
Northern red-legged frog	*Rana aurora aurora*	SOC
Cascades frog	*Rana cascadae*	SOC

Common Name	Scientific Name	Status
Green sturgeon	*Acipenser medirostris*	SOC
River lamprey	*Lampetra ayresi*	SOC
Pacific lamprey	*Lampetra tridentata*	SOC
Coastal cutthroat trout (Lower Columbia River and Upper Willamette)	*Oncorhynchus clarki clarki*	SOC
California floater	*Anodonta californiensis*	SOC
Mt. Hood primitive brachycentrid caddisfly	*Eobrachycentrus gelidae*	SOC
Caddisfly	*Farula constricta*	SOC
Mt. Hood farulan caddisfly	*Farula jewetti*	SOC
Great Columbia River spire snail	*Fluminicola columbianus (=fuscus)*	SOC
Columbia Gorge neothremman caddisfly	*Neothremma andersoni*	SOC
Wahkeena Falls flightless stonefly	*Zapada wahkeena*	SOC
Howell's bent grass	*Agrostis howellii*	SOC
White top aster (Curtus)	*Aster curtus*	SOC
Cliff paintbrush	*Castilleja rupicola*	SOC
Cold-water corydalis	*Corydalis aquae-gelidae*	SOC
Pale larkspur	*Delphinium leucophaeum*	SOC
Willamette Valley larkspur	*Delphinium oreganum*	SOC
Peacock larkspur	*Delphinium pavonaceum*	SOC
Howell's daisy	*Erigeron howellii*	SOC
Oregon daisy	*Erigeron oreganus*	SOC
White meconella	*Meconella oregana*	SOC
Barrett's penstemon	*Penstemon barrettiae*	SOC
Oregon sullivantia	*Sullivantia oregana*	SOC

A total of 9 species have been identified that may be present within a two-mile radius of the proposed action area that have been designated as threatened, endangered, or a species of concern. Recorded occurrences within the project area were provided via a requested database search conducted by the Oregon Natural Heritage Program (ONHP) in May, 2006.

Table 2. Listed Species That May Occur in the Project Area.

Common Name	Scientific Name	Federal Status	State Status
Oregon slender salamander	*Batrachoseps wrightorum*	SOC	SU
Northern red-legged frog	*Rana aurora aurora*	SOC	SV/SU
Coho salmon (Lower Columbia River ESU)	*Oncorhynchus kisutch pop.1*	T	E
Steelhead (Lower Columbia River ESU, winter run)	*Oncorhynchus mykiss pop. 27*	T	C
Townsend's (Pacific western) big-eared bat	*Corynorhinus townsendii*	SOC	SC
Northern Pacific (Northwestern) pond turtle	*Actinemys marmorata marmorata*	SOC	SC
Tall bugbane	*Cimicifuga elata*		C

As the project area is not connected to Johnson Creek, except during extreme floods, the fish species and stream invertebrate species will not be directly affected by this project and will not be discussed further in this assessment.

Listed Species

2.5.1 Columbian White-tailed Deer, Endangered

The Columbian white-tailed deer (*Odocoileus virginianus leucurus*) is a subspecies formerly common in bottomland and prairie woodland habitats throughout the Columbia, Willamette, and Umpqua Basins. This subspecies is found associated with dry rolling hills, grasslands, and oak forests, but riparian areas along major rivers are the preferred habitat for this threatened species. By the early 1900's, the species was extirpated over most of its range, with remnant herds in the Lower Columbia River and an isolated delisted population in Douglas County (USFWS 2003). This species has not been observed and is not likely to occur at the project site.

2.5.2 Willamette Daisy, Endangered

The Willamette daisy (*Erigeron decumbens* var. *decumbens*) is an endemic species to the Willamette Valley. Since 1980, only 28 occurrences have been documented in Polk, Marion, Linn, Benton, and Lane Counties, Oregon.

This daisy occupies areas of native wetland prairie, characterized by the seasonally wet tufted hairgrass (*Deschampsia cespitosa*) community, which grows in low, flat regions of the Willamette Valley where flooding creates anaerobic and strongly reducing soil conditions (USFWS 2000). The most recent recorded occurrence of this plant from the ONHP database within the project area is from 1903. No native wetland prairie communities are present in the project area. It is highly unlikely that the Willamette daisy is present in the project vicinity.

2.5.3 Bradshaw's Lomatium, Endangered

Bradshaw's lomatium (*Lomatium bradshawii*) is a plant endemic to western Oregon and Washington. This species was once widespread in wet prairies of the Willamette and Umpqua Valleys. However, much of this habitat has been developed or converted to agricultural lands.

There are no known occurrences of Bradshaw's lomatium on the project site in the ONHP database, and there are no native wet prairies on the site. It is highly unlikely that this lomatium is present in the project vicinity.

2.5.4 Bald Eagle, Threatened

Bald eagles (*Haliaeetus leucocephalus*) breed along the southeastern coast of Alaska east across Canada and south to California and Florida. Winters are spent along lakes, rivers, marshes and seacoasts in much of the United States (AOU 1998). Bald eagles are considered uncommon to locally common throughout the Willamette River Valley and its watershed during winter. The number of wintering bald eagles varies considerably, often depending upon weather and food availability both locally and elsewhere, but peak numbers occur during January and February. Eagle diets vary seasonally and geographically, but fish is the primary prey in Oregon, as in most areas (Frenzel 1984).

Bald eagles nest in open, mature forests near water. Nests are often located in large snags or old-growth trees (Brown 1999) where the canopy closure is greater than 40% (Call 1978). The tree species is less important than the diameter or height of the tree; eagles will typically build their stick platform nests in the largest trees available. In Oregon, bald eagles typically begin exhibiting courtship and nesting behaviors in January with egg laying and incubation occurring in February and March. Young are reared throughout April, May, and June, and fledging occurs in July and August (Isaacs *et al*. 1983). Most eagles that breed in Oregon winter in the vicinity of their nests.

There are no recorded occurrences of bald eagles within the project area or the surrounding areas in the ONHP database. Bald eagles are likely to transit through the project area.

2.5.5 Northern Spotted Owl, Threatened, Critical Habitat

The Northern spotted owl was first listed on June 26, 1990 and is currently designated as threatened in its entire range (USFWS 1992). The Northern spotted owl is a forest bird that inhabits old-growth or late-successional coniferous and mixed conifer-hardwood forest over a range that extends from southwestern British Columbia south to San Francisco Bay (USFWS 1992). Since northern spotted owl primarily occur in old-growth forests, they are highly unlikely to occur in the urbanized project area.

2.5.6 Golden Paintbrush, Threatened

Historically golden paintbrush (C*astilleja levisecta*) had been reported to occur at over 30 sites ranging from the Willamette Valley in Oregon north to Vancouver Island in BC. Today, golden paintbrush is believed to be extinct in Oregon (Wentworth 2003). Golden paintbrush occupies grasslands at elevations below 100 meters. It is typically associated with native fescue species (*Festuca idahoensis* and *F. rubra*) and a variety of other vascular plant species. It is often rooted in glacial outwash deposits. It is highly unlikely that golden paintbrush occurs in the project area. It has not been observed in the project vicinity and it is commonly believed to be extirpated from Oregon.

2.5.7 Howellia, Threatened

Howellia (*Howellia aquatilis*) historically occurred over a large area of the Pacific Northwest, but is now found only in localized areas. Plants have historically been found in only three counties in Oregon, including Multnomah County. Populations in Multnomah County occurred within the floodplains of the lower Willamette River. Today howellia is believed to be extirpated from Oregon (USFWS 1994).

There are no recorded occurrences in the ONHP database of howellia for the project area. It is believed to be extirpated from Oregon and is highly unlikely to be present in the project area.

2.5.8 Kincaid's Lupine, Threatened

Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*) occurs in the native grassland habitats within the Willamette Valley. Specifically, this lupine is found in native upland prairie

characterized by red fescue (*Festuca rubra*) and/or Idaho fescue (*Festuca idahoensis*) dominance and heavier soils with mesic to slightly xeric soil moisture levels.

There are no known occurrences on the project site according to the ONHP database, and there are no native grassland habitats in the vicinity. It is highly unlikely that this lupine is present in the project vicinity.

2.5.9 Nelson's Checker-mallow, Threatened

Nelson's checker-mallow (*Sidalcea nelsoniana*) is known from restricted areas of the Willamette Valley and the adjacent Coast Range of Oregon and in Cowlitz County, Washington. The range of the plant extends from southern Benton County, Oregon up to Cowlitz County, Washington and from central Linn County, Oregon to just west of the crest of the Coast Range (WSDOT 2001). Within the Willamette Valley, this plant most frequently occurs in ash swales and meadows with wet depressions, or along streams. Nelson's checker-mallow also grows in wetlands within remnant prairie grasslands. The woody, rhizomatous stem enables the plant to persist in disturbed situations such as roadside ditches and mowed hayfields. Records of the Bureau of Land Management (BLM) indicate the plant occurs along roadsides at stream crossings where non-natives such as blackberry (*Rubus* spp.) and Queen Anne's lace (*Daucus carrota*) are also present (BLM 1985).

There are no known occurrences of Nelson's checker-mallow in the project area according to the ONHP database and it has not been observed on the site. It is highly unlikely that this plant occurs in the project area.

Candidate Species

2.5.10 Yellow-billed Cuckoo

The yellow-billed cuckoo (*Coccyzus americanus*) occurs as a summer migrant throughout the eastern and central US and the southern portions of the western US. It is a rare breeding migrant in Oregon. There have only been a very few records in western Oregon since 1970 (Gilligan, *et al*, 1994), primarily in the middle to lower Willamette River area. Their preferred habitat is woodlands and dense cottonwoods and willows along watercourses. No nesting has been observed in western Oregon in many years (Gilligan, *et al*. 1994). There are no occurrences reported in the ONHP database in the project area. It is unlikely that yellow-billed cuckoos are present in the project area.

2.5.11 Streaked Horned Lark

Streaked horned larks (*Eremophila alpestris strigata*) are a subspecies of horned lark that occur in the Willamette Valley. They are year-round residents in the U.S. and nest in areas of sparse to no vegetation such as agricultural lands, pastures, prairies, desert shrublands, and alpine areas. They breed from March to June and the nest is a depression in the ground. Their diet includes insects and seeds. The eastern Oregon population may be increasing, whereas the Willamette Valley population is declining (Csuti, *et al*. 2001). This lark may occur in the project area, although there are no recorded occurrences in the ONHP database.

2.5.12 Oregon Spotted Frog

The Oregon spotted frog (*Rana pretiosa*) was recently differentiated from the Columbia spotted frog. The Oregon spotted frog occurs in western Washington and in several areas of Oregon, although it has not been observed in the Willamette Valley in many years (McAllister 2006). Oregon spotted frogs inhabit emergent wetlands, lakes and slow-moving streams or sloughs. It is almost completely aquatic and uses emergent plants for basking. Eggs are typically laid in shallow marshy pools that may be seasonal. Shallow, emergent wetlands appear to be their primary habitat. The presence of bullfrogs and non-native fish species has often been the cause of decline or local extirpation of spotted frogs. The most recent recorded observation of the Oregon spotted frog in the project area occurred in 1931 (ONHP 2002). Although there is suitable habitat at the project site, it is unlikely that this frog would be present within the project area.

Species of Concern

Within Multnomah County, there are forty-eight species of concern, most of which are not likely to be found in the project area. Many of the species are old-growth dependent or occur in the Cascades. Of the species that may occur in the project vicinity, four fish species and five invertebrate species have been eliminated from this assessment as there are no rivers or streams connected to the project site. Four species of concern have been recorded within a two-mile radius of the project area and therefore may be present within the project area. These include the Oregon slender salamander (*Batrachoseps wrightorum*), the Northern red-legged frog (*Rana aurora aurora*), Townsend's big ear bat (*Corynorhinus townsendii*), and the Northern Pacific pond turtle (*Actinemys marmorata marmorata*).

2.5.13 Oregon Slender Salamander

The Oregon slender salamander (*Batrachoseps wrightorum)* is found only in the central and northern Cascade Mountains of Oregon. It is most often found in the spring under woody debris. This is an old growth forest species and logging has had an adverse effect on these salamanders (NorthwestHerps 2006). This species was last observed on Mt. Scott in the 1980s (ONHP 2006). No observations were recorded since. Because this is an old-growth dependent species, it is unlikely that this species would be present within the project area.

2.5.14 Northern Red-legged Frog

The Northern red-legged frog (*Rana aurora aurora*) occurs in western Oregon, Washington and British Columbia, from the east slope of the Cascades west to the coast. The red-legged frog prefers cool, humid habitats of lowlands and foothills along the west coast. It inhabits permanent ponds, marshes, lakes and quiet streams with abundant vegetation, but after the breeding season or heavy rains, it disperses to moist fields and woodlands, far from water. Red-legged frogs eat a variety of forest invertebrates, including caterpillars and beetles, but have also been known to eat aquatic organisms. Adults use emergent aquatic and shoreline vegetation for cover during the breeding season. Young frog tadpoles use both mud and vegetation for cover and optimal habitat

is characterized by emergent willow (*Salix* sp.), grasses, cattails (*Typha* sp.), submerged weed stems and filamentous algae (Corkran & Thoms 1996; WDFW 1997).

Adolfson Associates (2000) observed red-legged frogs on the project site. The other most recent recorded occurrence of red-logged frog was within an unnamed drainage ditch in a subdivision off Johnson Creek in 1996 (ONHP 2006). The observed frog was a juvenile and was found in a small patch of creeping buttercup in an area with red alder and Himalayan blackberry. It is likely that red-legged frogs are present, and breeding, within the project area.

2.5.15 Pacific Western Big-eared Bat

The Pacific western big-eared bat (*Corynorhinus townsendii)* occurs throughout much of western North America from British Columbia southward through Mexico, south and eastward to South Dakota, across Texas, and to the Edwards Plateau. Big-eared bats require caves, mines or abandoned buildings for roosting and hibernating. They are extremely sensitive to disturbance. They feed along forest edges, roads or openings in forests, primarily on small moths (Csuti et al. 2001).

The most recent recorded observation of this bat in the project area occurred in 1928 (ONHP 2006). Currently, the project area is completely surrounded by commercial and residential development and has no mines or caves. No abandoned buildings are within the project area, although there may be abandoned buildings in SE Portland. It is unlikely that the Pacific Western big-eared bat would be present within the project area.

2.5.16 Northwestern Pond Turtle

The historic range of the Northwestern pond turtle *(Actinemys marmorata marmorata)* extends from the Puget Sound lowlands in Washington south into northern California (Holland 1994). This highly aquatic turtle occurs in streams, ponds, lakes, and permanent and ephemeral wetlands. Although pond turtles spend much of their lives in water, they require terrestrial habitats for nesting. Pond turtles may be seen basking on emergent or floating vegetation, logs, rocks, and occasionally mud or sand banks. They have suffered with the introduction of bullfrogs in the Puget Sound and Willamette Valley (NorthwestHerps 2006)

The last observation of the pond turtle near the project site was in 2001 on the east side of Mt. Scott (ONHP 2006). There is no suitable nesting habitat for the turtles on the project site. Pond turtles are sensitive to disturbance and are highly unlikely to be present at the project site.

The remaining species of concern have no record of occurring at or within the vicinity of the project site. The lack of presence data does not mean that the species does not exist at the project location. However, the occurrence of these species is unlikely due to the lack of suitable habitat.

2.6 Cultural Resources

The project site has been used for agricultural purposes as far back as aerial photographs are available (1939). There were some residences on the North parcel, but they have been removed.

There are no structures listed on the National Historic Register in the project area. The Springwater Trail is on the alignment of the former Portland Passenger Coach Rail line (electric trolley). It may be eligible for listing on the National Historic Register, but is not currently listed. There are no known cultural resources present in the project area, but due to the proximity to Johnson Creek, there may have been prehistoric use of the area. The site has been disturbed by agricultural activities and other construction activities.

2.7 Socio-Economic Resources

The project site is located entirely within the City of Portland. The surrounding land uses are residential, commercial and industrial/manufacturing. Surrounding land uses may include increasing density of development over time, although there is significant build-out in many locations already.

The median household income in Portland is $40,146, which is approximately 96% of the national median. The City of Portland has a diversified economy with manufacturing, technology, professional services, retail, government, and financial services. The project area is located within the Lents Town Center Urban Renewal Area. The Urban Renewal Area is designed to provide support for commercial and residential revitalization and redevelopment.

2.8 Air Quality/Noise/Light

Portland was designated as a non-attainment area for air quality due to high levels of carbon monoxide in the 1970s. Due to the adoption of an oxygenated fuel requirement, Portland now meets air quality standards and is considered a maintenance area for air quality[1]. In 2005, the Oregon Department of Environmental Quality (DEQ) recommended that the oxygenated fuel requirement be eliminated because the levels of carbon monoxide have been declining regardless of the fuel composition.

The City of Portland has a noise ordinance that restricts the levels of noise generated by construction and other sources to less than 85 decibels as measured 50 feet from the source. Normal working hours are 7 a.m. to 6 p.m. for construction activities.

The project area has a number of light sources from the adjacent commercial and industrial properties.

[1] Maintenance areas are those geographic areas with a history of nonattainment, but that have been consistently meeting air quality requirements in recent years.

SECTION 3. ALTERNATIVES

3.1 Identification of Alternatives

Because of the significant development that has occurred in the project vicinity and other areas of the Johnson Creek floodplain, it is unlikely that the project area can ever be restored to its historic condition. However, several opportunities exist to significantly improve habitat conditions in the project area. For this project, we have five major objectives, which are listed in Table 3 below. Each objective was chosen to reflect the importance of restoring the most functional and natural wetland habitats possible. There are a variety of restoration measures that could be used to achieve each particular objective, which are also identified in Table 3.

Table 3. Project Objectives and Measures to Achieve Objectives

Objective	**Alternative Measures to Achieve Objective**
1. Reduce/eliminate non-native species	A. Mechanical removal of non-native plants B. Develop a design that changes the water regime to suppress exotics C. Provide dense plantings of native species that compete with and suppress exotics
2. Increase diversity and complexity of wildlife habitat	A. Create interspersion of habitat types (open water; emergent; channel; scrub/shrub; forested) B. Modify hydrologic connections to increase wetland area and redistribute seasonal and perennial inundation C. Provide shrub and forested areas D. Revegetate with diverse species E. Restore and maintain upland habitat F. Create diversity of permanent and seasonal wetland areas G. Place large woody debris in wetlands and uplands
3. Restore rare native habitats	A. Restore coniferous forest uplands B. Restore forested wetlands C. Restore emergent wetlands D. Restore rare aquatic habitats
4. Remove fill to increase wetland area	A. Remove 3 acres of fill B. Remove 5 acres of fill C. Remove up to 8 acres of fill D. Excavate to create diversity of permanent and seasonal wetland areas
5. Protect the site from further degradation	A. Assess pollutants on site and ID potential sources for follow-up by City B. Provide adequate habitat buffers C. Develop a design that changes the water regime to suppress exotics over the long term D. Provide adequate long-term maintenance to ensure success of project

Eight restoration alternatives were considered using combinations of the above identified measures to provide a comparison of the range of possible types of wetland and riparian communities, and the No Action alternative is also evaluated.

3.2 No Action

The No Action alternative would not take any federal action to restore floodplain wetland or riparian habitats in the project area. This alternative would maintain the existing wetlands and vegetation communities that are increasingly becoming dominated by non-native species. This alternative would not increase wetland or floodplain area. The quality of the habitat in the project area would likely stay about the same because while some trees would mature on the site, the dominance of non-native species would likely increase.

3.3 Zenger Wetland Minimum Alternative (Z-min)

The Zenger Minimum alternative would include the following features: 1) remove non-native species on southern portion of the site only, by mowing reed canary grass and placing plastic or fabric over areas for 1 year; 2) remove blackberries around perimeter of southern portion of site; 3) revegetate southern portion of site with a forested perimeter and emergent and shrub wetland species in wetland area; 4) excavate open water channels and fingers to connect to culverts and provide one additional open water pond and two small islands to provide diversity and interspersion of habitats; 5) replace culvert under Springwater Trail to improve conveyance during high flows, but still maintain level of water similar to existing conditions. Overall, this alternative would control non-native species on the Zenger site, provide a minor amount of additional habitat diversity and complexity, and prevent further degradation of the site.

3.4 Zenger Wetland Maximum Alternative (Z-max)

The Zenger Maximum alternative would include the following features: 1) remove non-native species on both the southern and northern portion of the site by mowing reed canary grass and placing plastic or fabric over areas for 1 year; 2) remove blackberries on northern portion of site and around perimeter; 3) revegetate entire site with a forested perimeter and emergent and shrub wetland species in wetland area; 4) excavate open water channels and fingers to connect to culverts and provide multiple additional open water ponds and islands to provide diversity and interspersion of habitats; 5) replace culvert under Springwater Trail to improve conveyance during high flows, but still maintain level of water similar to existing conditions. Overall, this alternative would control non-native species on the Zenger site, provide a significant amount of habitat diversity and complexity through the excavation and creation of channels and islands and placement of wood, restore rare native aquatic habitats, and prevent further degradation of the site.

3.5 Central Wetland Minimum Alternative (C-min)

The Central Minimum alternative would include the following features: 1) excavate channel leading to North Wetland to create a more defined flow-through connection; 2) place water

control structure to allow management of water levels; 3) remove non-native species by mowing reed canary grass and placing plastic or fabric over areas for 1 year; 4) remove blackberries around perimeter of site; 5) revegetate site with a forested perimeter and emergent wetland species in wetland area. Overall, this alternative would control non-native species on the Central site, provide increased habitat diversity and complexity, and protect the site from further degradation.

3.6 Central Wetland Maximum Alternative (C-max)

The Central Maximum alternative would include the following features: 1) excavate channel leading to north site to ensure adequate connection; 2) place water control structure to allow management of water levels; 3) excavate approximately 1 acre of upland to enlarge open water and emergent wetland area; 4) remove non-native species by mowing reed canary grass and placing plastic or fabric over areas for 1 year; 5) remove blackberries around perimeter of site; 6) revegetate site with a forested perimeter and emergent wetland species in wetland area. Overall the Central maximum alternative would control non-native species, provide increased habitat diversity and complexity, remove fill from the floodplain and increase wetland area, and prevent further degradation of the site.

3.7 North Parcel Minimum Alternative (N-min)

The North Minimum alternative would include the following features: 1) remove approximately 2 acres of fill to enlarge wetland area; 2) create a semi-permanent pond surrounded by seasonal emergent and shrub wetlands; 3) excavate channel to ensure good connection with the culvert at SE 111th Avenue; 4) add additional culvert under SE 111th Avenue at a higher invert elevation to allow wildlife crossings during high water; 5) remove non-native species in existing wetland, primarily reed canary grass and non-native hawthorn; 6) revegetate all disturbed areas with native species; and 7) create minimum 50 foot wide forested buffer between remaining fill and wetlands. Overall, this alternative would control non-native species, increase habitat diversity and complexity, remove a small amount of fill from the floodplain and increase wetland area, restore rare habitats (forested wetland), and prevent further degradation of the site.

3.8 North Wetland Moderate Alternative (N-mod)

The North Moderate alternative would include the following features: 1) remove approximately 4.4 acres of fill to enlarge wetland area; 2) create semi-permanent wetland fingers surrounded by seasonal emergent and shrub wetlands; 3) excavate channel to ensure good connection with culvert at SE 111th Avenue; 4) add additional culvert under SE 111th Avenue at a higher invert elevation to allow wildlife crossings during high water; 5) remove non-native species in existing wetland, primarily reed canary grass and non-native hawthorn; 6) revegetate all disturbed areas with native species; and 7) create minimum 50 foot wide forested buffer between fill and wetlands. Overall, this alternative would control non-native species, increase habitat diversity and complexity, remove a moderate amount of fill from the floodplain and increase wetland area, restore rare habitats (forested wetland), and prevent further degradation of the site.

3.9 North Wetland Maximum Alternative (N-max)

The North Maximum alternative includes the following features: 1) remove approximately 6.2 acres of fill to enlarge wetland area significantly; 2) create diverse semi-permanent wetland fingers surrounded by seasonal emergent and shrub wetlands; 3) excavate channel to ensure good connection with culvert at SE 111th Avenue; 4) add additional culvert under SE 111th Avenue at a higher invert elevation to allow wildlife crossings during high water; 5) remove non-native species in existing wetland, primarily reed canary grass and non-native hawthorn; 6) revegetate all disturbed areas with native species; and 7) create minimum 50 foot wide forested buffer between fill and wetlands. Overall, this alternative would control non-native species, increase habitat diversity and complexity, remove a significant amount of fill from the floodplain and increase wetland area, restore rare habitats (forested wetland), and prevent further degradation of the site.

3.10 Beggar's Tick Wildlife Refuge Alternative

The Beggar's Tick Wildlife Refuge alternative includes the following features: 1) remove approximately 1 acre of fill adjacent to SE 111th Avenue; and 2) revegetate with forested wetland species and approximately 1.5 acres of upland/riparian to create forested buffer in eastern portion of site.

3.11 Selection of the Preferred Alternative

Tetra Tech conducted a habitat assessment on November 13 and 14, 2003, utilizing the Hydrogeomorphic (HGM)-based Assessment for Oregon Wetland and Riparian Sites (DSL 2001). The HGM assessment provides a quantitative assessment of wetland functions. The quantified existing and future conditions on the site were compared to preliminary costs for alternative restoration measures using a Cost Effectiveness and Incremental Cost Analysis (CEA/ICA) to determine which alternatives are cost effective and can be incrementally justified, based on a cost per habitat unit benefit.

The HGM methodology as described in DSL (2001) was utilized to quantify wetland conditions at the project site. The HGM method has been developed and calibrated specifically to wetlands and riparian zones in the Willamette Valley Region of western Oregon and uses quantitative data collected on site to determine the rating or score for each wetland function. The score for each function is an index value from zero to one, with zero indicating the least functional value and one indicating the highest functional value. Functional values are considered in comparison to highest functioning reference sites in the region.

The functions assessed by the HGM methodology include:

1. Water Storage and Delay – the capacity to store floodwaters and runoff and delay their release to downslope areas to reduce flood peaks
2. Sediment Stabilization and Phosphorus Retention – the capacity to intercept sediment, reduce erosion, and retain phosphorus
3. Nitrogen Removal – the capacity to remove nitrogen from surface water and sediments by plants and microbes

4. Thermoregulation – the capacity to maintain or reduce water temperatures
5. Primary Production – the capacity to produce plant matter through photosynthesis
6. Resident Fish Habitat Support – the capacity to provide habitat and support life history requirements of resident fish native to the region
7. Anadromous Fish Habitat Support – the capacity to provide habitat and support life history requirements for native anadromous fish species
8. Invertebrate Habitat Support – the capacity to support invertebrate species characteristic of natural wetland habitats in the region
9. Amphibian & Turtle Habitat – the capacity to provide habitat and support life history requirements of native amphibians and reptiles
10. Breeding Waterbird Support – the capacity to support breeding requirements of native and migratory waterbird species
11. Wintering & Migrating Waterbird Support – the capacity to provide wintering and migratory waterbird habitat
12. Songbird Habitat Support – the capacity to support life history requirements of native and migratory songbirds
13. Support of Characteristic Vegetation – the capacity to provide and support native plant communities

Because the project site is not directly connected to a stream or lake, the resident and anadromous fish habitat support functions do not apply and were not assessed, nor was the thermoregulation function which applies to riverine systems only.

Each of the 8 alternatives was evaluated using the HGM and according to the benefits that would be provided by restoration measures or by no-action. With-project scores are then compared to the without-project scores to get a change in habitat units. The change in habitat units is the value that is used to determine which alternative are cost effective and incrementally justified. The changes in habitat unit scores are provided in Table 4.

Table 4. Habitat quality scores for alternatives.

FUNCTION	Zenger Min	Zenger Max	Central Min	Central Max	North Min	North Mod	North Max	Beggar's Tick
1. Water Storage and Delay	0.3	0.4	0.6	0.8	1	1	1	1
2. Sediment Stabilization and Phosphorus Retention	0.8	0.9	0.9	1	1	1	1	1
3. Nitrogen Removal	0.7	0.8	0.7	0.8	0.7	0.8	0.9	0.8
5. Primary Production	0.8	0.8	0.7	0.8	0.7	0.8	0.8	0.7
8. Invertebrate Habitat Support	0.5	0.7	0.7	0.7	0.4	0.7	0.8	0.5
9. Amphibian & Turtle Habitat	0.5	0.6	0.6	0.6	0.5	0.6	0.6	0.5
10. Breeding Waterbird Support	1	1	1	1	0.6	0.9	1	0.4
11. Wintering & Migrating Waterbird Support	0.6	0.8	0.6	0.8	0.4	0.7	0.9	0.6
12. Songbird Habitat Support	0.9	0.9	0.9	1	0.7	1	1	0.6
13. Support of Characteristic Vegetation	0.8	0.9	0.9	1	0.9	1	1	0.9
Average HGM Score	**0.69**	**0.78**	**0.76**	**0.85**	**0.69**	**0.85**	**0.90**	**0.70**
Acres	**16**	**16**	**7**	**7**	**5**	**9**	**12**	**19**
Habitat Units (Avg * Acres)	**11.04**	**12.48**	**5.32**	**5.95**	**3.45**	**7.65**	**10.80**	**13.30**

The preferred restoration plan is the combination of the Zenger Maximum, Central Maximum, North Maximum and Beggar's Tick Alternatives. This plan was identified as cost effective and incrementally justified, producing an additional 17.04 habitat units at a total cost of $4,541,000.

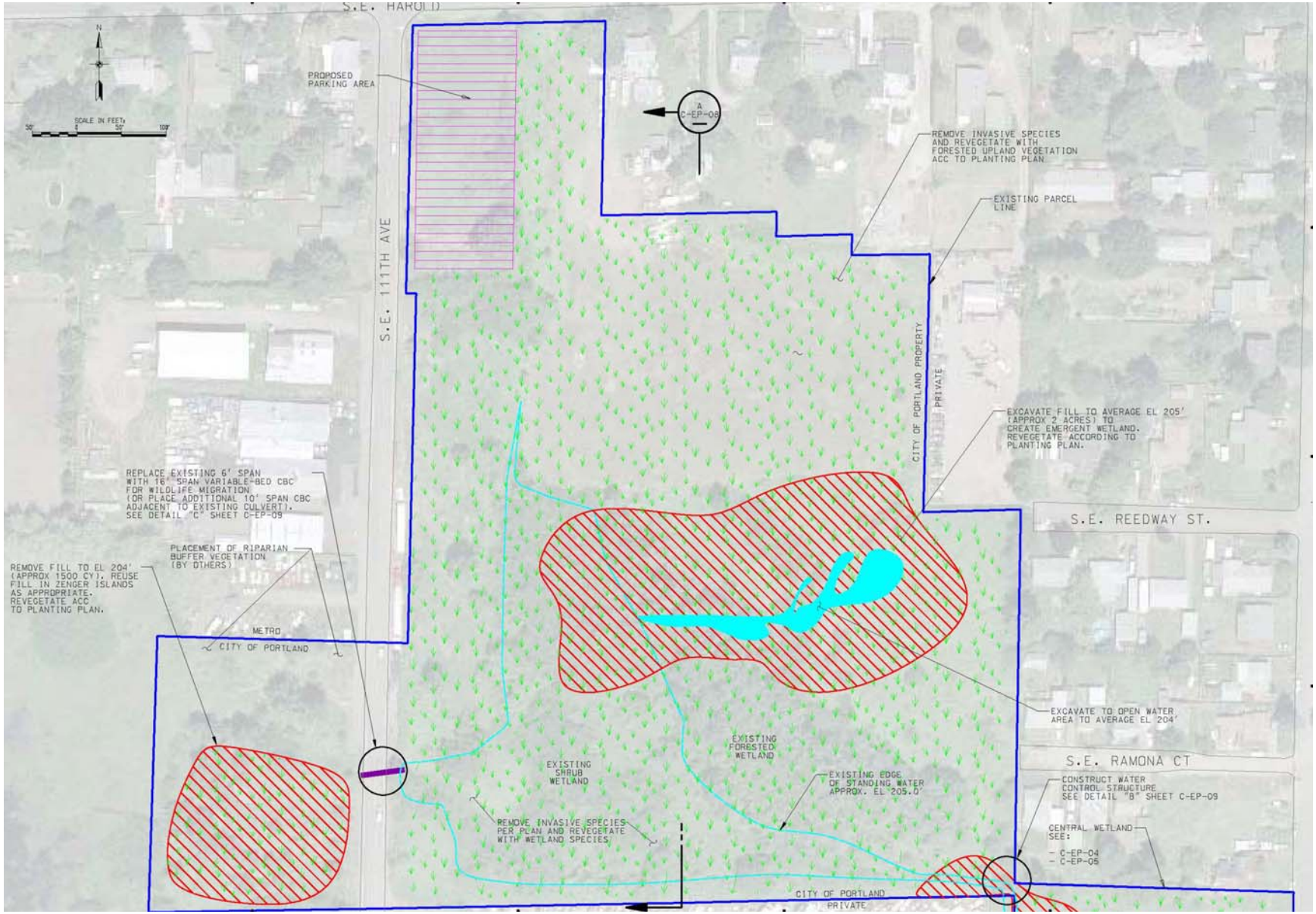

Figure 9. North Parcel and Beggar's Tick Marsh Minimum Alternative

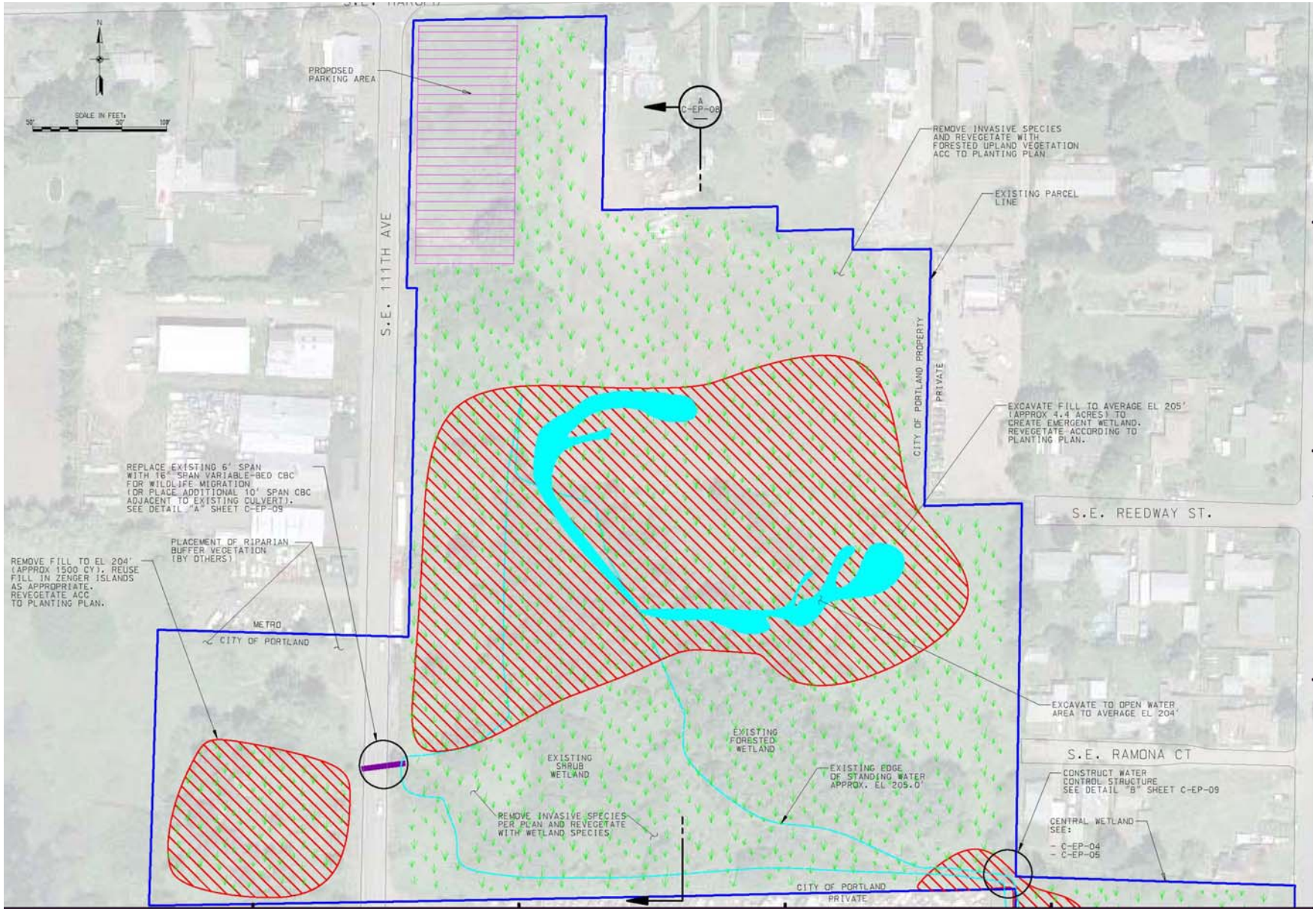

Figure 10. North Parcel and Beggar's Tick Marsh Moderate Alternative

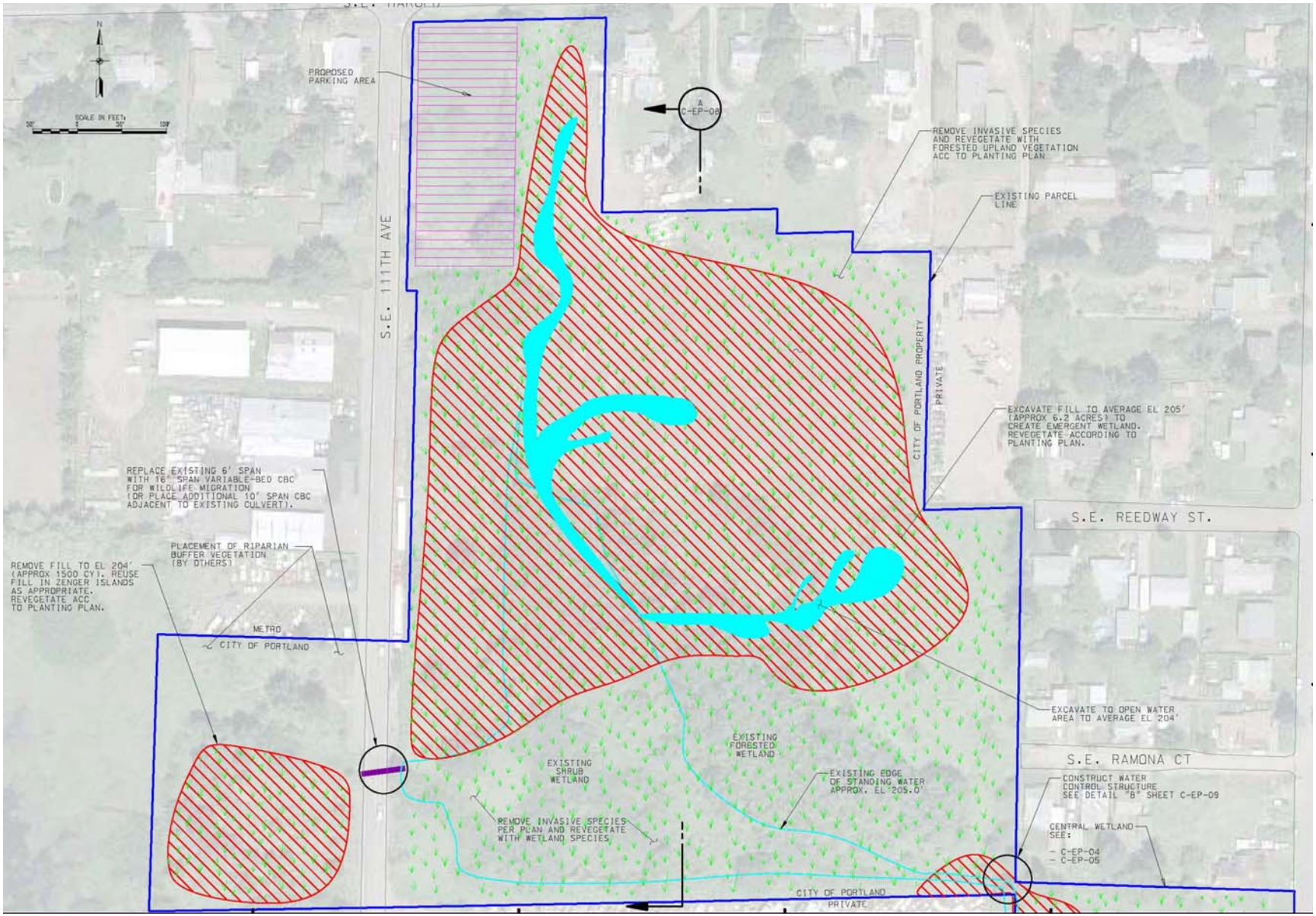

Figure 11. North Parcel and Beggar's Tick Marsh Maximum Alternative

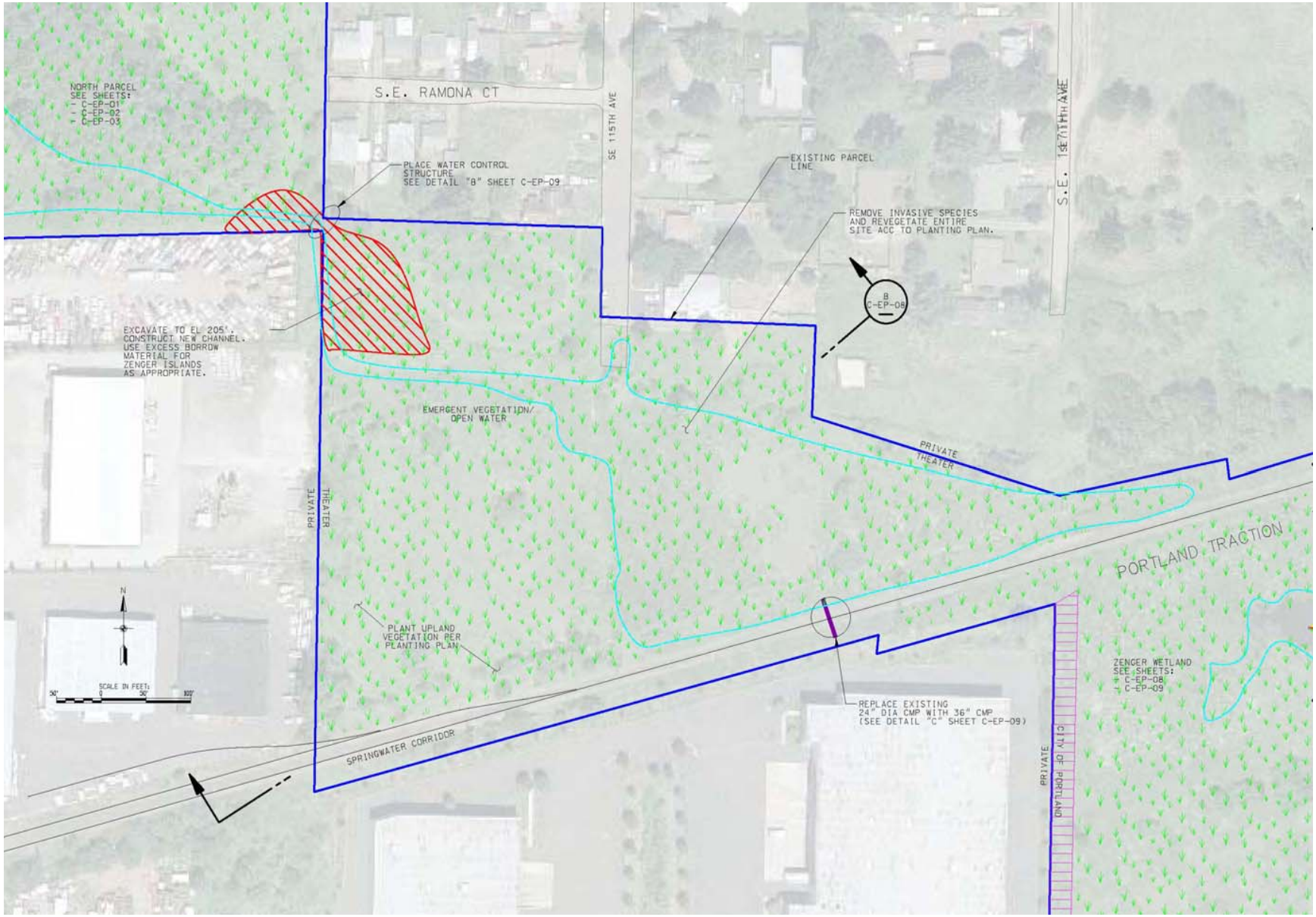

Figure 7. Central Wetland Minimum Alternative

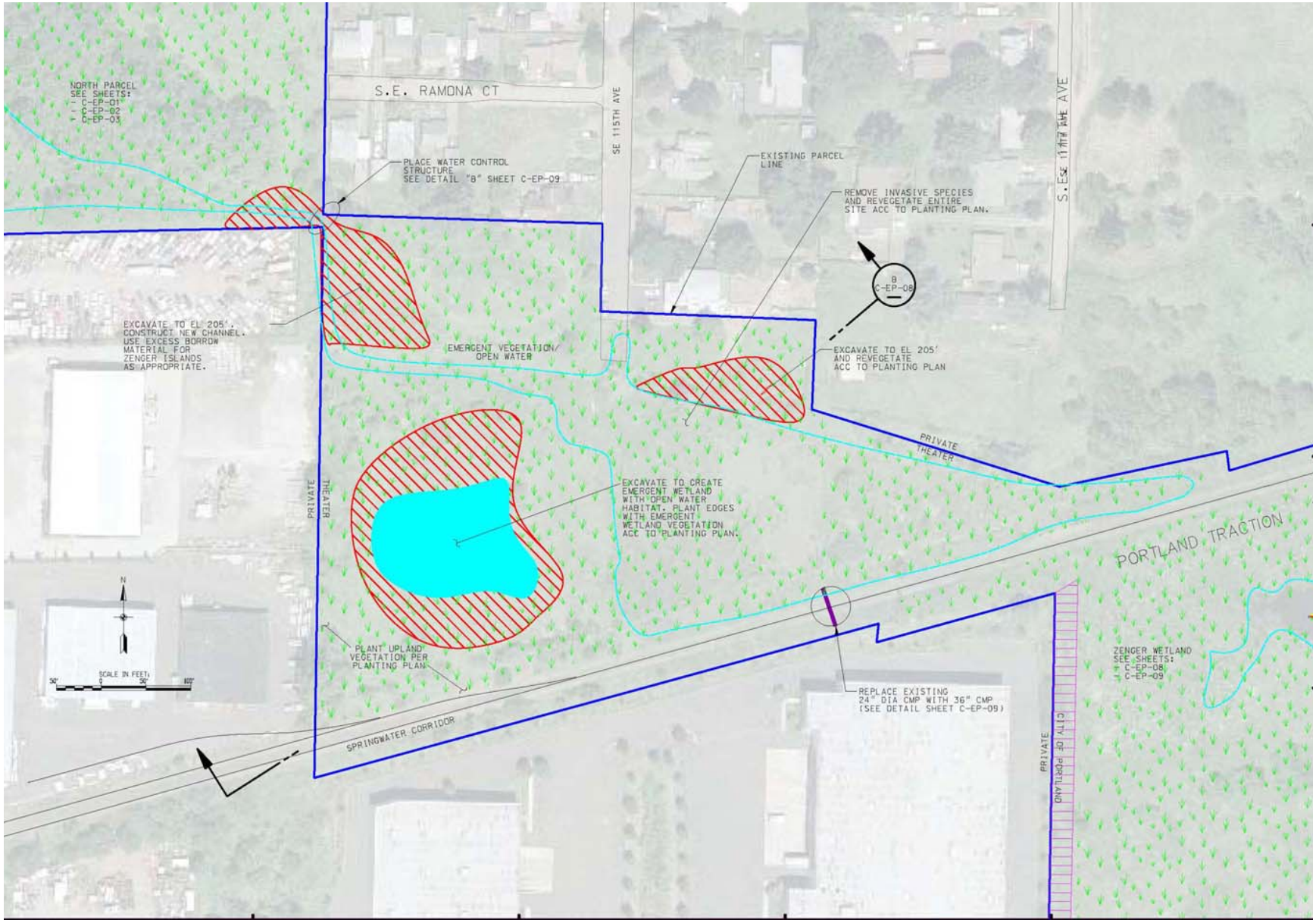

Figure 8. Central Wetland Maximum Alternative

Figure 5. Zenger Wetland Minimum Alternative

Figure 6. Zenger Wetland Maximum Alternative

SECTION 4. ENVIRONMENTAL IMPACTS

Environmental impacts for the no action and preferred alternatives are identified, below. Overall, the project is designed to have positive benefits on the environment.

4.1 Geology/Soils/Sediments

4.1.1 No Action

The no action alternative would not change the geology, soils or sediments in the project area.

Preferred Alternative

No effects on geology, either during construction or for the long term, are expected to occur as a result of the implementation of the selected plan.

Construction Effects
The project will involve the excavation of approximately 50,000 cubic yards (CY) of fill at the site for the creation of additional wetland areas. This material will be hauled to an approved upland location for disposal. Additional areas will be excavated to create wetland channels and ponds, but this material will be reused on site to create islands and other microtopographic features for habitat diversity.

Long-term Effects
The restoration of wetlands at the site will involve the expansion and creation of wetland and ponded areas. When soil is flooded, a rapid depletion of oxygen occurs and an anaerobic environment is created. Under these conditions, the soils at the site will take on the characteristics of hydric soils, which may have existed prior to the area being filled. This will be a beneficial effect of restoring natural hydric soil conditions to the site.

4.2 Water and Water Quality

4.2.1. No Action

The no action alternative would not change the water quality or quantity in the project area.

4.2.2 Preferred Alternative

The project may affect the local drainage area by slightly increasing the amount of surface water storage and groundwater infiltration. The removal of excavated material from the site will increase the available flood storage by less than 20 acre-feet. Local drainage patterns will be slightly altered by the constructed features by creating more defined connections between each of the parcels; however, the overall drainage area and retention time for stormwater runoff from precipitation will not change significantly.

Increasing the wetland area at the site is not expected to significantly affect water quality. The project area is only rarely connected to flows from Johnson Creek (during extreme floods). The increased area of wetland may increase groundwater infiltration, thus indirectly benefiting Johnson Creek by slightly increasing groundwater recharge/discharge. If on-going sampling indicates that pollutants are entering the site in stormwater, the City of Portland will separately address treatment of stormwater prior to discharge to the site.

4.3 Vegetation and Wetlands

4.3.1 No Action

The no action alternative would not change vegetation or wetlands in the project area, but it is expected that non-native species would spread to more areas of the project site over time with no action.

4.3.2. Preferred Alternative

The project will restore/create approximately 8 acres of wetlands and enhance habitat diversity and natural vegetation on approximately 30 acres of existing wetland and uplands. The project is expected to have a beneficial effect on native plant communities and wetlands. Non-native species currently present on the site will be removed or significantly reduced in population and area. The native plant communities will be diverse including shallow marsh habitats (*Typha* and *Carex* species), shrub wetlands (*Spirea* and *Salix* species), forested wetlands (*Populus* and *Thuja*), and uplands (*Pseudotsuga* and *Acer).*

4.4 Fish and Wildlife

4.4.1 No Action

The no action alternative would leave the existing habitat for wildlife species similar to the current situation. It is likely that non-native plant species will continue to expand and dominate the project area, which would reduce the habitat quality for native wildlife species.

4.4.2 Preferred Alternative

The selected plan will improve habitat diversity and complexity for native wildlife species. The removal of non-native vegetation and replanting of native vegetation will improve the quality of wetland and riparian habitats for birds and amphibians and reptiles. The project will improve wildlife migratory corridors and provide cover and nesting/foraging habitats. Waterfowl, amphibian and reptile habitat would especially be improved through the creation of wetland features by providing a diversity of habitats and complex structure including LWD and microtopographic relief.

4.5 Threatened and Endangered Species

4.5.1. No Action

The no action alternative would not restore any habitat for threatened or endangered species.

4.5.2. Preferred Alternative

Biological Assessments have been prepared and will be submitted to the U.S. Fish and Wildlife Service and the National Marine Fisheries Service detailing the potential impacts to listed species, critical habitat, and Essential Fish Habitat (EFH). During construction there is potential for the disturbance of threatened and endangered species present at the project site. Of the listed threatened and endangered species, only the bald eagle and the native amphibian species have the potential to be directly affected by project actions during construction.

Nesting bald eagles can be disturbed by construction activities if the nest is within 0.25 miles (0.4 km) of the construction site (Brown 1999). There are no known occurrences of bald eagles within 2 miles of the project site. Construction will occur during the summer months, and is not likely to adversely affect bald eagles. Bald eagles would benefit from the eventual availability of nest trees and perching/wintering sites, which currently do not exist at the site. The placement of LWD in the wetland features would also provide potential perching sites.

This project has been designed to benefit native amphibian species through the restoration of native vegetation and wetland habitats. The riparian features restored at the site will create a native plant community and corridor and provide riparian functions such as shade and cover to reduce seasonal water temperatures and LWD recruitment for habitat structure. The creation of microtopographic relief and increased cover will benefit native amphibians.

Overall, the project will have no effect on Columbian white-tailed deer, the Northern spotted owl, Golden paintbrush, Willamette daisy, Howellia, Bradshaw's lomatium, Kincaid's lupine, Nelson's checker-mallow. The project may affect but is not likely to adversely affect bald eagles during construction of the project. There are expected to be long-term beneficial effects for these species from the restoration of wetland and riparian habitats at the project site.

Conservation Measures
The project will be constructed generally during the period from July through September to reduce potential effects on bald eagles. During construction, if any native amphibians are observed, they will be relocated away from construction activities.

4.6 Cultural Resources

4.6.1 No Action

The no action alternative would have no effect on cultural and historic resources.

4.6.2 Preferred Alternative

The preferred alternative will include the excavation of fill material and native soils for the purpose of increasing wetland areas and connections between the parcels. A culvert will be replaced under the Springwater Trail, which will necessitate the temporary excavation of the trail. There are no known cultural or historic resources in the project area, so it is unlikely that there will be any adverse effects on cultural resources. To comply with Section 106 of the National Historic Preservation Act, additional coordination with the Oregon State Historic Preservation Office (SHPO) and appropriate Tribes will occur concerning this undertaking.

4.7 Socio-Economic Resources

4.7.1 No Action

The no action alternative will not change socioeconomics in the project area.

4.7.2 Preferred Alternative

As a result of the implementation of the selected plan, minor effects on the socio-economic resources will occur both in the construction phase and in the long-term. During construction, the project will generate employment and revenue for contracting companies. In the long term, the site will impact socio-economic resources in a beneficial way by providing a more desirable recreational and educational opportunity in an area where such a resource is lacking.

4.8 Air Quality/Noise/Light

4.8.1. No Action

The no action alternative will not affect air quality/noise/light in the project area.

4.8.2. Preferred Alternative

During construction, air quality and noise level restrictions and ordinances will be followed. Therefore, no significant effects to air quality and noise are expected. In addition, no additional light sources will be created at the project site; therefore, no light pollution impacts are expected. There will be no long term effects on air quality, noise, or light pollution.

4.9 Cumulative Impacts

The project will enhance and restore nearly 40 acres of wetland and riparian habitat. The overall project area has experienced a number of cumulative impacts over the past 150 years such as timber harvest, agricultural uses, road construction, and residential and industrial development. This project will incrementally reverse those cumulative impacts by restoring high quality wetland and floodplain habitats. Particularly because other restoration actions are occurring in

the Johnson Creek watershed, this project will have a positive cumulative effect on fish and wildlife and their habitats.

4.10 Environmental Justice

This project will restore wildlife habitat within the City of Portland and provide an educational and recreational amenity to the Lents Urban Renewal Area. This project will benefit a disadvantaged neighborhood within the City of Portland. There will be no adverse effects on disadvantaged, minority or subsistence populations.

SECTION 5. COORDINATION AND REGULATORY COMPLIANCE

5.1 Public and Agency Coordination

This Draft Environmental Assessment (EA) has been distributed for 30-day public review. Review comments will be requested from federal and state agencies as well as various property owners and interested publics. The following agencies were sent a copy of this document:

U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
National Marine Fisheries Service
Oregon State Historic Preservation Office
Oregon Department of Environmental Quality
Oregon Department of Fish and Wildlife
Oregon Department of Water Resources
Oregon Parks and Recreation Department
Confederated Tribes of the Warm Springs Reservation of Oregon
City of Portland

5.2 Regulatory Compliance and Environmental Statutes

National Environmental Policy Act
This Environmental Assessment satisfies the requirements of the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.).

Endangered Species Act
In accordance with Section 7(a) (2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed or proposed threatened or endangered species. Biological assessments have been prepared for the proposed action addressing federally listed species under the jurisdiction of the NMFS and the USFWS. The biological assessments will be provided to the respective agencies for their review and consultation.

Clean Water Act
Clean Water Act of 1977 (33 USC 1344): In compliance with the Clean Water Act, a Section 404 (b) (1) Evaluation has been prepared and state water quality (401) certification has been requested from the State of Oregon concurrent with the public review of this Environmental Assessment.

Magnuson-Stevens Fishery Conservation and Management Act (MSA)
An assessment for Essential Fish Habitat for both Chinook and coho salmon has been prepared and will be provided to the NMFS for their review and consultation.

Clean Air Act
The Clean Air Act of 1970, as amended, established a comprehensive program for improving and maintaining air quality throughout the United States. Its goals are achieved through permitting of stationary sources, restricting the emission of toxic substances from stationary and mobile sources, and establishing National Ambient Air Quality Standards (NAAQS). Title IV of the Act includes provisions for complying with noise pollution standards. The proposed action is in compliance with this act.

National Historic Preservation Act
Section 106 of the National Historic Preservation Act requires that a federally assisted or federally permitted projects account for the potential effects on sites, districts, buildings, structures, or objects that are included in or eligible for inclusion in the National Register of Historic Places. Further coordination with the Oregon State Historic Preservation Office (SHPO) and appropriate Tribes will occur as necessary to comply with Section 106.

Fish and Wildlife Coordination Act
The Fish and Wildlife Coordination Act of 1934 states that federal agencies involved in water resource development are to consult with the USFWS and state agency administering wildlife resources concerning proposed actions or plans. The proposed action has been coordinated with the USFWS and ODFW in accordance with the Act through review of this EA.

Comprehensive and Environmental Response, Compensation and Liability Act
The location of the proposed project is not within the boundaries of a site designated by the USEPA or the State of Oregon for a response action under Comprehensive and Environmental Response, Compensation and Liability Act (CERCLA), nor is it a part of a National Priority List site under CERCLA. Should any hazardous or toxic waste material be discovered during construction, its presence will be responded to within the requirements of the law and Corps' regulations and guidance.

Executive Order 11988, Floodplain Management
This executive order requires federal agencies to consider how their actions may encourage future development in floodplains, and to minimize such development. The proposed action is in compliance with Executive Order 11988.

Executive Order 11990, Protection of Wetlands
This executive order requires federal agencies to protect wetland habitats. The proposed action is in compliance with Executive Order 11990.

Executive Order 12898, Environmental Justice
This executive order requires federal agencies to consider and minimize potential impacts on subsistence, low-income or minority communities. The goal is to ensure that no person or group of people should shoulder a disproportionate share of the negative environmental impacts resulting from the execution of this country's domestic and foreign policy programs. This proposed action is in compliance with Executive Order 12898.

Analysis of Impacts on Prime and Unique Farmlands
No change to prime and unique farmlands would occur from the proposed action.

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